

# LASCA Leaves



## Los Angeles County Department of Arboreta and Botanic Gardens

### Gardening School

**I**N 1975, a trial program aimed at developing a prototype curriculum for a professional gardening school was conducted at the Los Angeles State and County Arboretum. The idea of utilizing the personnel, facilities, and plantings of a botanic garden to develop a corps of gardeners sufficiently knowledgeable to warrant some kind of governmental licensing was itself not new. Working it out has been something else. Francis Ching, director of the Los Angeles County Department of Arboreta and Botanic Gardens, had been promoting the idea in numerous sessions around the country with members of the American Association of Botanical Gardens and Arboreta. The idea was to develop a program that could readily be adopted by botanic gardens and arboreta all over the country and that would award to students successfully completing the course study a certificate of professional competence from the AABGA. Such a certificate would help to establish a nationwide standard of competence that would give gardeners a professional status.

With the enthusiastic approval of fellow members of the AABGA, a program was developed with the education division at the Los Angeles State and County Arboretum to develop the trial program. Twenty-one subjects were listed to provide

flexibility in the selection of subject matter according to each garden's particular requirements. They included plant taxonomy, plant records, herbicides, fungicides and disease, insects and insecticides, safety, sprinklers, communication, soils, plant identification, soil preparation, lawns and ground covers, fertilizers, mulches, soil amendments, greenhouse and nursery operation, plant breeding and propagation, tree, vine and shrub care, tool and equipment maintenance, specialty plants, horticultural literature, annuals, bulbs and vegetables.

Study sessions were divided between work in the classroom and in the field. Of the six students who participated in last year's program, three are now qualified members of our gardening staff. This year, twelve students were selected for training, half of them women. Their ages range from 20 to 26. The first thing they were asked to do was to write a brief essay on the functions and purposes of a botanic garden as they understood them. The results showed a surprising grasp of the subject that helped in determining the level of instruction. The students



*On-the-job training is a key part of the gardening school program conducted at the Los Angeles State and County Arboretum. Here, education specialist Ronald Call (left) conducts a study session in the Arboretum's tropical greenhouse.*



then began a 16-hour course on the basic principles of plant taxonomy under Dr. Leonid Enari, staff senior biologist. The last 8 hours were spent in the field learning to recognize 50 different plants. Along with this study, the students started work on a series of projects that would acquaint them with the practical, day-to-day aspects of work in a botanical garden. These included weed removal, pruning, installing decomposed granite paths, planting, and a host of other jobs that would be essentially the same at botanic gardens throughout the country.

The final results of this year's program were not available at this writing, but it seems clear that a national, accredited curriculum that will turn out a new and higher grade of professional gardeners is well on its way to being established.



*In 1974, Mrs. Virginia Robinson was presented with a plaque from the California Arboretum Foundation by Mrs. John A. Grivich, Foundation president.*

#### Virginia Robinson

FOR MANY YEARS, the will of Mrs. Virginia Robinson had provided that her home and garden would

eventually go to the County of Los Angeles. Early in 1973, following discussions with the Department, California Arboretum Foundation, her advisors, and the County of Los Angeles, Mrs. Robinson decided to make a life estate of her eight-and-a-half acre Beverly Hills garden estate and further stipulated that a million dollar endowment would be provided for the maintenance of the property.

The offer was typical of the generosity and sensitivity to civic affairs of the widow of Harry Winchester Robinson, son of the founder of the J. W. Robinson department stores. Since his death in 1932, Mrs. Robinson had directed her energies to raising money for the Hollywood Bowl, the Music Center and the Children's Hospital. She had become famous during those years for the parties she gave at her home, invariably in the interest of some worthy cause and attended always by stars from the entertainment world.

On the evening of September 10, 1974, a reception and dinner was given in the Demonstration Home Gardens of the Los Angeles State and County Arboretum to honor Mrs. Robinson and to celebrate the acceptance by the County of her garden estate. It was a gala affair attended by members of the County Department of Arboreta and Botanic Gardens under whose direction the estate would be managed, County supervisor Peter Schabarum, members of the California Arboretum Foundation and friends. As the evening drew to a close, Mrs. Robinson was presented with plaques from the County and the Foundation acknowledging her gift.

Last August, a few weeks before reaching her 100th birthday, Mrs. Robinson died, leaving among other good works her estate, now the Virginia Robinson Gardens, to be enjoyed by the people of Los Angeles County.

#### Elections

M<sup>R. F. HAROLD ROACH</sup> was re-elected president of the Department's Board of Governors at a luncheon meeting held at South Coast Botanic Garden last July 12. The election marked the fourth time Mr. Roach has been elected to that office during the nearly twenty-five years he has been a member of the Board. He previously served successive terms as president in 1970 and 1971.

#### New President

H<sup>ELEN (MRS. VINCENT R.) PICKETT</sup> was elected president of the South Coast Botanic Garden Foundation last June 7 at the annual election meeting of the Board of Trustees. She will be the seventh president to serve the Foundation since it was formed in 1961. A member of the board for the past six years, serving the last three as first and second vice president, Mrs. Pickett served as public relations chairman for the Foundation for six years, and served for three years as coordinator



*Mrs. Helen Pickett*

of the garden's annual Fiesta de Flores.

In addition to her association with the garden, Mrs. Pickett has been a



member of the Women's Division Board of Directors, Los Angeles Area Chamber of Commerce for 20 years, serving as president of that body in 1969. She was a member of the board of directors of Los Angeles Beautiful for six years and currently is on the organization's Advisory Council. In 1967 she received the Papal Cross from Pope Paul for her work as general chairman of the Catholic Resettlement Committee for Cubans. It is the highest honor the Pope can bestow on a layman.

In her new role as Foundation president, Mrs. Pickett will focus on the fund-raising program pledged to offset costs of the recently constructed administrative complex at South Coast.

Elected with Mrs. Pickett for the mandated one-year terms were Patricia (Mrs. William T.) Box, first vice-president; Burt Nakamura, second vice-president; Florence (Mrs. Edward) Siudmak, secretary; and Edna Schoenbaum, treasurer.

## Water Conservation

**W**ATER CONSERVATION at the Department of Arboreta and Botanic Gardens has taken two forms: for the public, special plant displays and published information; within the gardens, application of the same information given the public plus some other practices applicable only to botanic gardens.

Even before the impact of the current drought problems made it clear that Southern Californians would have to reduce the amount of water they were accustomed to using in their gardens and in their homes, the Department produced what have now become familiar items in the community, namely, Horticultural Bulletins Numbers 8 and 12. Number 8, issued in May 1976, offers information on the advantages of mulching, advantages which include the saving of water through reduc-

tion in the loss of moisture. Number 12, first made available to the public last March, lists twelve procedures for homeowners to follow to insure at least a ten percent re-

For Brush Fire Protection and Soil Erosion Control" which provides information on the use of drought-tolerant plants and on effective watering procedures.



Since 1965, an intensive mulching program has been carried out at the Arboretum as a means of conserving water, discouraging weeds, and adding soil nutrients. A typical mulch, as shown here, is composed of redwood shavings and horse manure.

duction in water use. It also provides a partial list of easily available drought-tolerant trees, shrubs, and ground covers.

Last year when drought problems became apparent, plans were drawn to develop displays of drought-tolerant ground covers at each garden to help homeowners combine the esthetics of landscaping with water conservation. Since completed, the displays include such succulents and natives as *Malephora crocea*, *Delospermum 'Alba'*, *Gazania uniflora*, *Arctostaphylos uva-ursi*, *Aloe brevifolia*, *Baccharis pilularis*, *Hypericum calycinum*, and *Rosmarinus officinalis*. All of this is supplemental to the 1973 publication "Green Belts

Within the gardens, a priority system has been set up that allows the greatest amount of water to those plants that most need it and are most valuable. Lawns are at the low end of this rating with the result they have looked a bit brown at times. Effective use was made of water by cutting back on fertilizer and by verti-cutting, a process that reduces thatch permitting better water penetration. Additionally, continued checking of the moisture content in soil before watering and rescheduling the time clocks of automatic sprinklers accordingly makes it possible to water selectively and with the greatest efficiency. Similarly, soil soakers and basins around



specific plants provide the most efficient use of a minimum amount of water. For the rest, all the standard conservation methods are observed: no cleaning with hoses, watering early in the day to avoid unnecessary evaporation, and never allowing runoff. For the long range, the continued lawn reduction program initiated several years ago along with the present mulching procedures will not only conserve on water application but will provide optimum growing conditions for trees and shrubs while further reducing maintenance costs.

#### New Greenhouse

A NEW GREENHOUSE-WORKROOM to provide needed facilities for propagation research and related studies has been built in an area across from the Garden For All Seasons at the Los Angeles State and County Arboretum.

Major funding for the \$37,800 project was provided by the California Arboretum Foundation, with the County contributing \$10,000 for the installation of utilities which include thermostat-controlled heaters, humidifiers and coolers, washing sinks, fans and lighting. The \$27,800 provided by the Foundation will be credited toward the half million dollars pledged toward the Hall of Environmental project. To date, the Foundation has already donated over \$52,000 to the County for architectural services in connection with that project.

The thirty- by eight-foot structure is divided lengthwise into two sections, one fifty feet long for the greenhouse, the other thirty feet long for the workroom. The entire building has been detailed with redwood siding and glass and designed so as to be complementary to the projected Hall of Environmental Education of which it will be an integral part.

#### Christmas at Descanso

IT WAS 18 years ago that the first public celebration of Christmas was staged at Descanso Gardens. The motivating idea was to move away from the use of man-made decorations so widespread over the previous several decades, and reintroduce more natural material into the Christmas scene. The Descanso Gardens Guild, which began to produce the Christmas shows in 1961, alternating them each year with a fall "Festival of Lights" until the energy shortage cut off that event, followed the original idea, although each succeeding show seemed more elaborate than the last.

This year, tradition will be observed but there will also be something of a new look. Guild member and show chairman Mrs. Herbert G. Sawyer says that under the theme "Christmas From Many Lands," visitors will see the decorative expressions of people of many ethnic backgrounds. The first thing they will notice that is different, she said, will be bright-colored pennants flying from the gateposts at the Descanso Gardens entranceway. Also new and at the entrance will be tree and other decorations reflecting the Spanish-Mexican-California heritage of the gardens. The body of the exhibit will be held, as always, in the Hospitality House. Areas represented include Africa, Australia-New Zealand, Central Europe, Early American Heritage, Early California, the Middle East, the Netherlands, North and Central America, Scandinavia, South America, and the Ukraine.

The show will open to the public December 3rd and close on the 11th. On December 12th a special showing will be held for the handicapped. Red-carpet teas will be held in two sessions, December 1st and 2nd, for the hardworking membership who put the exhibit together. On the evening of December 2nd a reception will be held in honor of the exhibitors.

#### Sewer Water Research

THE ANSWER to a major problem faced by cities all over the country—where to dispose of municipal waste water and its residual sludge—may be found in a research study now being conducted at the Los Angeles State and County Arboretum. The study started last June following receipt by the California Arboretum Foundation of a National Science Foundation grant to underwrite investigation of the life span of viruses in sewage water after the water is used to irrigate land.

The practice of dumping sewage water and sludge into the nation's rivers, lakes, and coastal waters having long since been proven unacceptable, the use of the effluent to irrigate land has seemed to be an attractive alternative. The possible drawback has been the threat of disease resulting from the viruses in the effluent.

Viruses are among the most serious pathogens found in this country's waste water. Before that water can be used for agriculture, the survival-rate of the disease-producing viruses must be thoroughly investigated so that guidelines can be drafted that will insure minimum environmental risk.

The NSF grant supports a one-year study under the direction of the Los Angeles State and County Arboretum research chief and plant pathologist, Dr. Paul Cheo, with projected support for further study as the project may require. As principal investigator, Dr. Cheo, together with associates to be hired under the grant, will, in addition to determining the survival of virus in soil, focus on isolating existing factors in soil known to be antiviral. Results obtained are expected to be utilized in other public-health-related studies concerning pathogenic viruses. The grant is one of a number that have been awarded to the California Arboretum Foundation for environmental research projects related to plants.



# Magnolia Grandiflora

David Deardorff

**L**ONG ASSOCIATED with the Deep South where it is a highly prized native tree, *Magnolia grandiflora* has been called "the most splendid ornamental tree in the American forest." Because of its beautiful flowers and foliage it has been widely cultivated, acquiring as a consequence many different common names, among them: southern magnolia, sweet magnolia, evergreen magnolia, laurel leaved magnolia, laurel, big laurel, laurel bay, bull bay, and bat tree. Of these, southern magnolia and bull bay are the most frequently used in the western United States.

The foliage of *Magnolia grandiflora* is highly valued for its decorative qualities, and during the Christmas season quantities of branches are shipped from the southern states to northern cities. The leaves are thick and leathery, lasting a long time in decorative arrangements. They are five to ten inches long, three to six inches wide, and oval in shape with smooth margins. Smooth and shiny on the upper surface, they usually have a rust colored, velvet-like coat on the under surface.

The large, fragrant, creamy white flowers are borne solitarily on the tip of each branch and are most abundant in May and June but fre-





quently appear sporadically all summer long in Southern California. Each flower has six to twelve petals and numerous stamens and carpels spirally arranged on an elongated, cone-shaped torus. Because of their structure the flowers are considered to be relatively primitive and, therefore, they receive special attention from botanists. Unspecialized or primitive flowers such as those of the magnolias remind botanists that there was a time when there were no flowers on earth.

It is difficult to imagine a world without flowers because the flowering plants are now the most abundant plants on land. Without flowers there would be no bees, butterflies, hummingbirds, or any of the many other kinds of animals which depend on flowers for food. Modern civilization could not exist either, for we are dependent on a single family of flowering plants, the grasses. Grasses such as wheat, rice, and corn are the dietary staples for most of the people on earth. Yet for nearly a half-billion years of evolution, from the time of the earliest known fossil microorganisms to the end of the age of dinosaurs, there were no flowers on earth. Some extinct plants closely related to cycads had somewhat flowerlike reproductive structures, but true flowers did not exist until about 130 million years ago.

Modern botanists generally agree that the first flowering plants probably resembled the magnolias, but exactly when, where, and how they evolved remains, as Darwin stated over a century ago, "an abominable mystery." Many lines of evidence, including the morphology of the flowers and pollen grains, wood anatomy, and the study of fossils, indicate that the most primitive flowering plant families which have survived to the present day are the *Magnolia* family (Magnoliaceae) and a few other closely related families. However, it would be a mistake to assume that some particular

species of *Magnolia* is identical to some species which lived 130 million years ago!

Although the origin of the flowering plants remains something of a mystery, one of the major factors in their evolution must have been, just as it is today, their ability to exploit animals in the reproductive phase of their life cycle. The early flowering plants evolved a structure (the flower) which attracted animals such as beetles which came to the flower and ate parts of it. In the process of feeding on the flowers the beetles became dusted with pollen, and when they flew on to fresh flowers for more food, they effectively transferred pollen from one flower to another ensuring reproductive success for the plant. This mutual relationship between primitive flowering plants and primitive insects was extremely successful and both groups rapidly evolved new species. The probability that flowers and insects evolved together becomes clear when one compares the fossil record of both groups. The magnolias and their relatives are, even today, primarily beetle pollinated. At the time that the flowering plants first evolved, the beetles were the largest group of insects available to function as pollinators, comprising some 37% of all insect fossils from that time period. By the time of the Eocene epoch, about 75 million years later, many of the more highly specialized plant families such as the Lamiaceae (mint family), Scrophulariaceae (snapdragon family), and Asteraceae (daisy family) had evolved. During the same time interval the highly specialized flower-visiting flies (Syrphidae) and butterflies (Lepidoptera) had evolved. Some 20 million years after the Eocene, during the Oligocene, the first bees appeared. By Miocene time, some 25 million years ago, many of the woody plants were indistinguishable from modern species with which we are familiar. Highly specialized flower-visiting birds such

as hummingbirds, and nectar-feeding bats are of very recent origin, perhaps only one or two million years old. Many of the modern plant species visited by birds and bats are also relatively recent. Thus, the mutualistic relationship between flowers and the animals which visit them is one of the important factors contributing to the flowering plants' success.

Long before botanists became interested in the magnolias because of their primitiveness, and quite aside from their beauty, men valued them for strictly utilitarian purposes. Many species of *Magnolia* have been used in the folk medicines of the Chinese, the American Indians, and the colonial settlers of America. The dried bark of *M. glauca* (and other species, including *M. grandiflora*) was listed in the official U.S. Pharmacopeia from 1820 to 1894. A tincture or decoction of the bark was used as a bitter tonic, anti-malarial, and diaphoretic. *Magnolia* root bark was used by Dr. John Lining (1708-1760) of Charleston, South Carolina as a substitute for Peruvian Bark (*Cinchona*) to relieve "intermittent fevers." Dr. Barton used *M. grandiflora* combined with snakeroot for the same purpose, to reduce fevers, in Florida. Louisiana Choctaws boiled the bark of *M. grandiflora* in water and bathed in the liquid to reduce the itching of prickly heat. Curiously, although *Magnolia* bark was dropped from the official U.S. Pharmacopeia just before the turn of the century, *M. grandiflora* recently (1977) has been reported to be of value in modern medicine—but for a purpose altogether different from the alleviation of fever. The National Cancer Institute of the National Institutes of Health reports that *M. grandiflora* has been discovered to contain a promising new anti-cancer drug, parthenolide, and is currently under active investigation.

In addition to its medicinal uses,



*M. grandiflora* was at one time (and perhaps still is) a valuable timber tree. As of 1946, the annual harvest amounted to about 25 million board feet with an estimated reserve of not less than a billion board feet of trees of sawtimber size. About two-thirds of the lumber was used in the manufacture of furniture, boxes, and interior house finish. Its most exacting use was for venetian blind slats due to its fine, uniform texture, light weight, hardness, and ability to remain flat without warping. Forest trees of *M. grandiflora* generally reach a height of 60 to 80 feet with a trunk diameter of two or three feet. One tree was reported to be more than 100 feet tall with a trunk diameter of about five feet.

In its native habitat, from southeast North Carolina to central Florida and west along the Gulf Coast to eastern Texas, *Magnolia grandiflora*

grows on moist but well drained sites along streams and rivers and near swamps. It is especially abundant in the Mississippi delta region and is the official state tree of Louisiana and Mississippi. Although the climate in its natural range is warm temperate to sub-tropical, it is cultivated as far north as Massachusetts and British Columbia. Its natural range is limited to the south because its seeds and seedlings cannot tolerate even a light freeze. Larger plants, such as those obtainable from a nursery, are much more tolerant of cold than seedlings.

When one considers the environmental conditions of its native habitat it becomes readily apparent that *M. grandiflora* requires a rich, well drained soil and considerable moisture for best growth under cultivation. In Southern California it is at its best when planted in a lawn as a

specimen tree. It takes large amounts of water to keep a lawn green in this climate, and *M. grandiflora* appreciates the water, too, as long as the soil is well drained. The one difficulty with such a planting is that the thick, fleshy roots are sensitive to injury and compacted soil. Therefore it should be planted in an area of the lawn which receives the least foot traffic. It is also frequently planted as a street tree, but its performance is not as good under these circumstances due to the high reflected heat load resulting from the pavement and sidewalks, and the correspondingly reduced humidity and restricted root zone. It may also be expected to suffer badly from lack of water during the current drought. If you own a specimen of this tree and wish to keep it healthy you must water it, which means you ought to restrict

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your water usage in some other area. A brochure with detailed suggestions on budgeting your water usage is available from the Los Angeles State and County Arboretum.

*Magnolia grandiflora* has relatively few pests and diseases, scale being the most serious insect pest. Deficiency problems such as chlorosis and nitrogen starvation are much more frequent than pests. Chlorosis results when iron becomes unavailable to the plant in alkaline soils and water (apply iron chelates). Apply fertilizer to correct nitrogen starvation. Magnolias need large amounts of fertilizer, but over fertilization can result in burning of the leaf edges due to salt damage,

especially if the soil or water is already high in salts.

Plants of *M. grandiflora* raised from seed are extremely variable. They may be tall and spreading, or narrowly pyramidal to somewhat shrubby in habit. They also may not bloom until about fifteen years old. Several very large specimens of the species (the wild type) may be seen among the plantings around the Queen Anne Cottage in the historical section of the Los Angeles State and County Arboretum. There are many selected, named cultivars propagated by grafting, which are available as balled and burlapped plants in early spring and as container plants at any time of the year.

These cultivars are predictable in their habit of growth, often bloom within two or three years after planting, and are uniform with regard to the size of flowers and length of blooming season. One of the best new cultivars for Southern California is *M. g* 'Majestic Beauty.' Several specimens of this cultivar recently have been planted on the grounds of the Los Angeles State and County Arboretum near the new tropical display greenhouse.

Dr. Deardorff is a former member of the Arboretum research staff who has been specializing in taxonomic studies.

## LOS ANGELES STATE AND COUNTY ARBORETUM, Arcadia

### NOVEMBER 6 — 2 p.m.

Sunday Afternoon Talk  
"Flower Variations in Orchid Species"  
Earl Ross, orchidist

### NOVEMBER 5-6—Sat. 12 to 5 p.m. Sun. 9 a.m. to 5 p.m.

Rose and Horticultural Show  
Presented by San Gabriel Valley Rose and Horticultural Society

### NOVEMBER 12-13 — 9 a.m. to 5 p.m.

Chrysanthemum Show  
Presented by Pasadena Horticultural Society

### NOVEMBER 19-20 — 9 a.m. to 5 p.m.

Novice Bonsai Exhibit  
Presented by Santa Anita Bonsai Society

### DECEMBER 3-4—Sat. 12 to 5 p.m. Sun. 9 a.m. to 5 p.m.

Camellia Show  
Presented by Southern California Camellia Council

### DECEMBER 10-11 — 10 a.m. to 5 p.m.

Art Show  
Presented by Foothill Art Society

## CALENDAR

### NOVEMBER, DECEMBER, AND JANUARY

#### JANUARY 13 — 8 p.m.

Theodore Payne Foundation Lecture  
"Calif. Flora After a Fire"  
Geoff Burleigh, Calif. Native Plant Photographer

#### JANUARY 21-22—Sat. 9 a.m. to 5 p.m. Sun. 10 a.m. to 5 p.m.

Iris Show  
Presented by Southern California Iris Society

#### JANUARY 28-29 — 10 a.m. to 5 p.m.

Bonsai Show  
Presented by Baikoen Kenkyukai Bonsai Society

## DESCANSO GARDENS, La Canada

### NOVEMBER 20 — 2 p.m.

Sunday Afternoon Talk  
"Grafting"  
George Lewis, superintendent

### DECEMBER 3-11—9:30 a.m. to 4:30 p.m.

Christmas Decoration Exhibit  
Presented by Descanso Gardens Guild

### JANUARY 14 — 1 to 4 p.m.

Rose Pruning and Planting Demonstration  
Presented by Descanso staff and Pacific Rose Society

## SOUTH COAST BOTANIC GARDEN, Palos Verdes Peninsula

### NOVEMBER 6 — 10 a.m.

Sunday Morning Walk  
"Fall Flowering Plants"  
Jeffrey Hook, education assistant

### NOVEMBER 20 — 2 p.m.

Sunday Afternoon Talk  
"Outdoor Container Gardening"  
Edward Hartnagel, assistant superintendent

### JANUARY 28-29 — 10 to 5 p.m.

Camellia Show  
Presented by South Coast Camellia Society